PATENT CLAIMS

1. An electromagnetic actuating device, comprising
an armature (20) which is provided in a housing (10) in such a way that it can be moved in an axial direction relative to a magnet frame (12) consisting of a core section (14) and a yoke section (18),
and a coil device (24) which can be subjected to an electrical current in order to generate the movement,
wherein the magnet frame is designed in a hollow-cylindrical manner in such a way that it at least partially surrounds the armature and comprises an intermediate section (16) consisting of non-magnetic material between the core section and the yoke section,
characterized in that
a permanent material connection is established in at least one of the cross-over areas (28) between the yoke section and the intermediate section and between the intermediate section and the core section by means of a friction welding method.

2. The device as claimed in claim 1, characterized in that the yoke section and/or the core section comprises a cone shape (32) at an end facing the intermediate section.

3. The device as claimed in claim 2, characterized in that the cone shape (32) merges in a truncated manner into a flat section (34) which runs in a plane perpendicular to the axial direction.

4. The device as claimed in any of claims 1 to 3, characterized in that the intermediate section (16) is designed as an annular and/or hollow-cylindrical or solid-cylindrical element which, at an end facing

the yoke section and/or the core section, comprises a cone shape adapted to the respective end of the yoke section and/or core section.

5. The device as claimed in any of claims 1 to 3, characterized in that the intermediate section (16) is designed as an annular and/or hollow-cylindrical or solid-cylindrical element which, at an end facing the yoke section and/or the core section, comprises a cylinder shape adapted to the respective end of the yoke section and/or core section.

6. The device as claimed in any of claims 1 to 5, characterized in that the yoke section and the intermediate section are formed in one piece from non-magnetic material.

7. A method for manufacturing a magnet frame, comprising a core section (14) and a yoke section (18) and also a non-magnetic intermediate section (16) lying therebetween, for an electromagnetic actuating device, in particular the electromagnetic actuating device as claimed in any of claims 1 to 6, by establishing in each case a permanent connection between the core section and the intermediate section as partners of a first cross-over and between the yoke section and the intermediate section as partners of a second cross-over, characterized by the steps:
   - setting one of the partners of the first cross-over and/or of the second cross-over in a rotary movement at a predefined rotary speed,
   - pressing the respective other partner of the first or second cross-over against the rotating partner in order to give rise to heating which plasticizes the intermediate section in the pressing region;
   - stopping the rotary movement; and

- pressing the partners against one another with a predefined compression force in order to produce a welded cross-over.

8. The method as claimed in claim 7, characterized in that the first cross-over and the second cross-over are produced at the same time.

9. The method as claimed in claim 7, characterized in that the first cross-over and the second cross-over are produced sequentially.

10. The method as claimed in any of claims 7 to 9, characterized in that the predefined rotary speed of the rotary movement is set to a range between 1500 and 2500 min^{-1} and/or
pressing takes place with a pressure of between 50 and 250 N/mm^2
and/or
the compression force as pressure is set to a range between 80 and 300 N/mm^2.

11. The use of the electromagnetic actuating device as claimed in any of claims 1 to 6 for actuating a hydraulic or pneumatic valve, in particular a Cetop valve.